

Optimizing the USGS Mineral Resources Program

Science Portfolio

Committee

Roderick G. Eggert

Co-Chair

Roderick G. Eggert is Research Professor of Economics and Business at Colorado School of Mines, where he has been on the faculty since 1986. He also is Deputy Director of the Critical Materials Innovation Hub, a research consortium, led by the Ames National Laboratory and established by the U.S. Department of Energy in 2013 to accelerate innovation in energy materials. Eggert received a B.A. in earth sciences from Dartmouth College, and an M.S. in geochemistry and mineralogy and a Ph.D. in mineral economics from Pennsylvania State University. He previously served on the National Academies Committee on Earth Resources, the Panel to Review the Mineral Resource Surveys Program Plan of the U.S. Geological Survey and the Committee on Review of the U.S. Geological Survey's Mineral Resources Program, and chaired the Committee on Critical Mineral Impacts on the U.S. Economy. Eggert testified before U.S. House and Senate committees in 2018 and 2023 on the USGS critical minerals list and mineral security.

Carol D. Frost

Co-Chair

Carol Frost is Professor Emerita at the University of Wyoming, where she joined the faculty in 1983. At the University of Wyoming she served as founding director of the School of Energy Resources (2006-2007), Associate Vice President for Research (2008-2010), Vice President for Special Projects (2010-2012) and Associate Provost (2012-2013), before joining the National Science Foundation as Division Director of Earth Sciences from 2014-2018. Her research focuses on Precambrian crustal evolution, granite petrogenesis, the origin of massif anorthosite, and the formation of critical element ores in alkaline-carbonatite systems. She also applies isotopic tracers to environmental problems, including the identification of produced and natural waters. Frost is co-author of the textbook *Essentials of Igneous and Metamorphic Petrology* published by Cambridge University Press. She is a fellow and past president of the Mineralogical Society of America, fellow and councilor of the Geological Society of America, Geochemistry Fellow of the Geochemical Society/European Association of Geochemistry, and board member of the British Geological Survey. Frost received an A.B. in Earth Sciences from Dartmouth College and a Ph.D. in Earth Sciences from the University of Cambridge.

Robert J. Bodnar

Member

Robert J. Bodnar is the C. C. Garvin Professor and University Distinguished Professor in the Department of Geosciences at Virginia Tech. Before joining Virginia Tech, he worked in the Mineral Deposits Research Group at Chevron Oilfield Research Company in La Habra, California, and completed an internship in the mineral deposits group at the United States Geological Survey in Reston, Virginia in 1978-1979. Bodnar's research focuses on geofluids, with emphasis on their role in ore formation. Bodnar has experience with a wide range of ore deposit types, including porphyry copper±gold±molybdenum, epithermal gold-silver deposits, Mississippi Valley Type lead-zinc, orogenic gold, and uranium, tin-tungsten, diamond, and other gemstone deposits. Bodnar has been awarded the Society of Economic Geologists Lindgren Award and Silver Medal, the American Geophysical Union's N. L. Bowen Award, the Thomas Jefferson Medal from the Virginia Museum of Natural History, and was named Virginia's Outstanding Scientist in 2010. He was awarded the Laurea Honoris Causa from the Università di Napoli Federico II, Napoli, Italy, and is a member of the U.S. National Academy of Sciences and the Virginia Academy of Science, Engineering and Medicine. Bodnar received a B.S. in chemistry from the University of Pittsburgh, M.S. in geology from the University of Arizona, and Ph.D. in geochemistry and mineralogy from Pennsylvania State University. He previously served on the National Academies Committee on Potential Impacts of Gold Mining in Virginia.

Nelia W. Dunbar

Member

Nelia W. Dunbar is the emerita director of the New Mexico Bureau of Geology and Mineral Resources and an adjunct faculty member in the Department of Earth and Environmental Sciences at the New Mexico Institute of Mining and Technology. She directed an electron microprobe lab for 20 years and researched the geochemistry of volcanic rocks, in particular volcanic ashes and other explosive eruptions in New Mexico and Antarctica. She is a Geological Society of America fellow and received the New Mexico Tech Distinguished Research Award in 2021 and the GSA Frye Award in 2023. She received a B.A., summa cum laude, in geology from Mount Holyoke College and a Ph.D. in geochemistry from the New Mexico Institute of Mining and Technology. She previously served on the National Academies Board on Earth Sciences and Resources. As former New Mexico State Geologist, Dunbar managed projects funded by the USGS Mineral Resources Program.

Stephanie B. Grocke

Member

Stephanie Grocke is President of Global Geologica, USA, an international geological consulting firm that provides services to exploration and mining companies. She has been a technical consultant to the exploration industry since 2017, where she has worked on projects across the globe, with specific focus on the United States, Canada, and Australia. Her expertise has been applied to various deposit styles and commodities including precious and base metals as well as critical minerals. Her passion is identifying new potential deposits by collating data from the public domain with data from private databases to develop 3D models that elucidate new potential for economic mineral resources. Grocke is an active member of the Geological Society of Nevada, the Women's Mining Coalition, Geological Society of America, and the American Exploration and Mining Association, and is a registered Professional Geoscientist (P.Geo.) by the Association of Engineers and Geoscientists of the province of British Columbia, Canada. Grocke received a Ph.D. in geology from Oregon State University and was a postdoctoral fellow at the National Museum of Natural History, a Fulbright Scholar, and a National Geographic Explorer.

Rachel L. Hampton

Member

Rachel Hampton is a Lithium Exploration Geologist at Kobold Metals, an exploration and mining company, and is based in Reno, Nevada. She was previously the lead exploration geologist for Lithium Americas where she carried out greenfield exploration for lithium deposits all over the world, and helped to actualize development at the Thacker Pass project specifically, all of which might someday help to power the energy revolution. While exploring for these deposits, Rachel has continued to also carry out research on the origins of sedimentary Li deposits, to further our understanding of the potential of different geographic regions around the world to host economic Li deposits. Before working in industry Dr. Hampton received a B.A. in Earth and Planetary Science from Harvard University, where she received the Francis H. Burr Award, and a Ph.D. in Earth Science and Volcanology from the University of Oregon where she researched the geochemical evolution of magma chambers.

Douglas Hollett

Member

Doug Hollett is the President of MH Technology Partners, working with national labs, academia, industry partners and federal agencies on technical and policy aspects of earth and geologic resources. His academic background is in structural geology and rock mechanics, and he has expertise in the geothermal, carbon sequestration, minerals, and fossil energy sectors. He has over 29 years executive experience in the domestic and international oil and gas sector, and 8 years at the U.S. Department of Energy (DOE) including as Director Geothermal Technologies, Deputy Assistant Secretary Renewable Power, and Principal Deputy Assistant Secretary/Acting Assistant Secretary Fossil Energy. Doug was most recently Special Advisor Critical Minerals Supply Chain at DOE from 2021-2023. He is a member of the Board of Trustees at Wellesley College, and an advisor to startups in geothermal energy, uncertainty quantification, CO2 sequestration and critical minerals. He has a B.A. in geology with a minor in music from Williams College and an M.S. in geology from the University of Utah. Doug currently serves on the National Academies Committee on Earth Resources (CER) and was previously a member of the 2020 Committee on Catalyzing Opportunities for Research in the Earth Sciences (CORES): A Decadal Survey for NSF's Division of Earth Sciences.

Cecilia Lazo-Sköld

Member

Cecilia Lazo-Sköld is the Senior Director for Site Innovation and Development at Regeneration Enterprises, Inc., a public benefit company that remines and restores legacy mining sites. Regeneration is owned by Resolve, an independent non-governmental organization. She is a geochemist, currently working on metal recovery from mine waste and waste repurposing. Lazo-Sköld previously worked at Rio Tinto as a technical expert advising its iron ore, diamonds and uranium operations in Australia, copper operations in Mongolia, titanium operations in Madagascar, and lithium operations in Serbia. Prior to that, she worked on waste characterization programs for permitting and closure of mines in North and South America, cleanup of Superfund and abandoned mine sites in North America, and nuclear waste disposal in Sweden. Lazo-Sköld received a B.S. in chemistry from Pontificia Universidad Católica del Perú and an M.S. in environmental science and engineering from the Colorado School of Mines.

Steven S. Masterman

Member

Steve Masterman retired as Alaska's State Geologist after a career in the mining industry, state highway department, and finally the state geological survey. He has served as Alaska's Chief Science Officer, Alaska Geospatial Council Chair, Advisory Board Chair for the University of Alaska Fairbanks Department of Mining and Geological Engineering, and as President of the Association of American State Geologists (AASG). He is currently an advisor to the University of Alaska Vice Chancellor for Research and a geological consultant with Alaska Earth Sciences. Masterman's areas of expertise include economic geology, engineering geology, and the geology and mineral deposits of Alaska. During his term as President of AASG, he testified to both Senate and House Resources Committees. He has received two distinguished service awards from the AASG and was voted an Honorary State Geologist upon retiring. Masterman received a B.Sc. in mining geology from Imperial College London and an M.Sc. in geological engineering from the University of Alaska. As former Alaska State Geologist, Masterman managed projects funded by the USGS Mineral Resources Program. Masterman has publicly advocated for funding for the USGS Earth MRI program.

Karin E. Olson Hoal

Member

Karin Olson Hoal is the Wold Family Professor in Environmental Balance for Human Sustainability in the College of Engineering at Cornell University. She was previously Research Professor and Director of the Advanced Mineralogy Research Center at Colorado School of Mines and has held positions at JKTech at the Sustainable Minerals Institute at the University of Queensland, Australia, Hazen Research, and Rio Tinto Namibia. She was part of an international group in the early 2000s who developed the interdisciplinary field of geometallurgy which is now a major cross-functional field bridging science and engineering for more effective mineral operations. Olson Hoal has been an active speaker and keynote on transforming the mineral resources sector through sustainable adaptation of geoscience data into risk-reduced operations for improved community impact and engagement. She is a Fellow of the Society of Economic Geologists, Past Chair of the Sustainable Development Committee with the Society of Mining, Metallurgy and Exploration, and Emerita Board Member for the Colorado Women's Education Foundation. Olson Hoal received a B.Sc. in geology, music, and French from St. Lawrence University, an M.Sc. in Earth Sciences from McGill University, Canada, and a Ph.D. in geosciences from the University of Massachusetts, Amherst. She was a Postdoctoral Fellow at the University of Cape Town, South Africa. She previously served on the National Academies Committee for the Review of the NIOSH Research Roadmap on Asbestos and Other Mineral Fibers.

Richard Smith

Member

Richard Smith is Professor of Exploration Geophysics at Laurentian University, Ontario, Canada. He previously worked for geophysical contracting companies in Ottawa and as a mineral explorationist for Pasminco Exploration in Melbourne, Australia. Smith is an expert in electromagnetic and magnetic methods and has experience in gamma-ray spectrometry and gravity methods. Specific contributions include the development of airborne acquisition systems and the interpretation of data to extract geological information. Dr Smith's primary interest is the application of geophysics for mineral exploration. Smith has served on the Geological Review Group of The Nuclear Waste Management Association and the Independent Review Panel of the National Geological Screening (UK) on behalf of Radioactive Waste Management Limited and coordinated by the Geological Society of London. He has numerous awards for best papers in journals and best presentations at conferences, has been inducted into the International Mining Technology Hall of Fame (Exploration) for the development of the MEGATEM system, and has been a distinguished lecturer on three occasions. Smith received a B.Sc. in geophysics and M.Sc. in economic geology from the University of Adelaide, and an M.Sc. and Ph.D. in physics from the University of Toronto.

David Zhen Yin

Member

David Zhen Yin is the lead research scientist and program director of Stanford Mineral-X at Stanford University. He is also the principal scientist at Stanford Center for Earth Resources Forecasting. Before joining Stanford, Yin was a research associate at the Edinburgh Time-Lapse Project in Scotland, leading a geophysical monitoring research project in collaboration with Equinor Research Center (Bergen) from 2016 to 2018. His research develops data science and artificial intelligence for prediction, uncertainty quantification, and decision-making in critical earth resources exploration and development. His research delivered several key geoscience technologies transferred as in-house technologies at major mining and energy companies worldwide. He has authored one book and over twenty peer-reviewed journal articles on these topics. Yin received the SEG Frans and Alice Hammons Award in 2014, the Chevron CoRE Fellowship in 2018, and the Stanford Human-Centered AI grant in 2023. Yin received a Ph.D. in geoscience in 2016 from Heriot-Watt University, United Kingdom, and was a postdoctoral fellow in Geological Sciences at Stanford from 2018-2021.